2.10 Geological Setting

2.10.1 Bedrock and Structural Geology

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.10.1.

2.10.2 Surface Geology and Topography

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.10.2.

2.10.3 Mineral Resources

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.10.3.

2.11 Water Quality and Water Resources

2.11.1 Groundwater Resources

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.11.1.

2.11.2 Surface Water Characteristics

No substantive change has occurred to surface water characteristics since publication of the 1996 FEIS except for the upper Black Partridge Creek watershed.

Since publication of the 1996 FEIS, on-going commercial/industrial development has resulted in extensive changes to the entire Black Partridge Creek basin, most specifically to its two headwater tributaries. These changes have compromised water quality and the preferred habitat for the mottled sculpin (*Cottus bairdi*) and other fishes and aquatic macroinvertibrates throughout the Black Partridge Creek basin.

Black Partridge Creek still supports a fish community with the diversity and abundance of fishes similar to that supported by other streams of its size in northern Illinois. The mottled sculpin (*Cottus bairdi*) still occurs in large numbers in the area on either side of Bluff Road, and was the most abundant species encountered during the 9 February and 19 May 1999 surveys. For more information, refer to Draft SEIS, Section 2.11.2 and 1996 FEIS, Section 2.11.2.

2.11.3 Wetlands

A reevaluation of wetland resources was conducted in June 2000 by the Illinois Natural History Survey (INHS) (Plocher, 2000). Sites examined were within or near a 305 meter (1,000 foot) wide corridor following the approximate centerline of the proposed I-355 South Extension. In the last eight years, the vast majority of the plant communities at these sites have undergone significant shifts in species dominance.

Therefore, new wetland delineations were performed on all sites considered to be wetlands in the previous reports. The physical alteration or natural change observed at some of the sites is described in the 2000 Wetland Technical Delineation Report (Plocher, 2000). Of the 42 sites previously examined, six had been physically altered, generally by earth

moving activities, one site drained, and one filled. Four sites exhibited significant increases in the shrub component, four sites showed obvious decreases in species diversity and the remaining 28 sites still present remained unchanged except for shifts in dominance. Two new wetland sites (12A and 41A) were delineated. Refer to Draft SEIS, Section 2.11.3 for additional wetland information.

2.11.4 Floodplains

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.11.4.

2.11.5 Seeps

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.11.5.

2.12 Biological Resources

2.12.1 Vegetation and Cover Types

Updated vegetative cover typing within the I-355 South Extension alignment conducted during the fourth quarter of 1998 by the Illinois Natural History Survey (INHS) found few changes. Cover type change observed amounted to early succession of grass and shrubs onto scattered farm fields left out of production and former home sites. However, the majority of cover types within the I-355 South Extension alignment has remained unchanged (INHS, 1998). Refer to 1996 FEIS, Section 2.12.1.

2.12.2 Wildlife

A wildlife survey update conducted for the I-355 South Extension in October and November of 1998 by the INHS found few habitat changes that would impact wildlife composition. INHS staff recommended no additional fieldwork beyond actions recommended in the 1996 FEIS (INHS, 1998). Refer to 1996 FEIS, Section 2.12.2.

Birds

A avian habitat survey update conducted for the I-355 South Extension in October and November of 1998 by the INHS documented minor habitat change that was not of a magnitude to significantly alter avian composition within the Project Corridor. INHS staff recommended no additional fieldwork (INHS, 1998). Refer to 1996 FEIS, Section 2.12.2.1.

Mammals

A mammalian survey update conducted for the I-355 South Extension in October and November of 1998 by the INHS found nothing that would substantially alter the original mammalian fauna conclusions of the 1996 FEIS or suggest the need for additional fieldwork(INHS, 1998). Refer to 1996 FEIS, Section 2.12.2.2.

Reptiles, Amphibians, Fish, Mollusks and Macroinvertebrates

A survey update of reptile and amphibian habitat conducted for the I-355 South Extension in 1998 found little change from the 1996 FEIS survey aside from the loss of a swath

of upland forest adjacent to Black Partridge Forest Preserve. INHS staff concluded no additional reptile and amphibian fieldwork was necessary (INHS, 1998).

A survey update of fish, mollusks and macroinvertebrates habitat conducted for the I-355 South Extension in 1998 found little changed from the 1996 FEIS survey except for Fraction Run and Black Partridge Creeks. Fraction Run Creek underwent additional channalization for golf course development originally documented in the 1996 FEIS. Black Partridge Creek changed in watershed size due to industrial park development along the Creek's upper tributaries. This habitat change, however, was determined not significant. INHS staff recommended no additional studies or analysis beyond actions recommended in the 1996 FEIS (INHS, 1998). Refer to 1996 FEIS, Section 2.12.2.3.

2.12.3 Threatened and Endangered Species

INHS field review for federal and state listed threatened and endangered species conducted in 1998 found no threatened or endangered species beyond those observed in the 1996 FEIS surveys (INHS, 1998). Refer to 1996 FEIS, Section 2.12.3

Summary findings of the 1998 updated survey for federally and state listed threatened and endangered species are as follows.

Federally Listed Species

INHS field review found no habitat for, or population of, federally listed species in addition to those documented in the 1996 FEIS. The 1996 FEIS documented two federally listed species: the federally endangered Hine's emerald dragonfly (*Somatochlora hineana*) and the federally and state listed endangered Leafy prairie clover (*Dalea foliosa).*

On November 13, 1995, the USFWS issued a biological opinion that no adverse affects to the Hine's emerald dragonfly are likely as a result of the Proposed Action. Refer to Draft SEIS, Section 2.12.3 for additional information.

INHS staff documented the continued presence of the Leafy prairie clover at the same location and density as documented in the 1996 FEIS. INHS also re-assessed habitat suitability within the I-355 South Extension alignment for the federally endangered Indiana bat (*Myotis sodalis*). Staff concluded that only marginally suitable roosting habitat occurred within the alignment and those colonies were not likely present because the limits of the species range was south of the Project Corridor. Refer to Draft SEIS, Section 2.12.3 for additional information.

State Listed Species

The 1996 FEIS documented the following state listed species: spotted turtle (*Clemmys guttata*), great egret (*Ardea alba*), king rail (*Rallus elegans*), black-crowned night heron (*Nycticorax nycticorax*), double-crested cormorants (*Phalacrocorax auritus*), pied-billed grebe (*Podilymbus podiceps*), common moorhen (*Gallinula chloropus*), osprey (*Pandion haliaetus*), brown creeper (*Certhia americana*), cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), Hine's emerald dragonfly (*Somatochlora hineana*), white lady's slipper (*Cypripedium candidum*), slender sandwort (*Arenaria patula*) and crawe's sedge (*Carex crawei*).

Since publication of the 1996 FEIS, the following species have been de-listed by the Illinois Endangered Species Board and are no longer considered threatened or endangered: great egret (*Ardea alba*), double-crested cormorant (*Phalacrocorax auritus*), cooper's hawk (*Accipiter cooperii*), and crawe's sedge (*Carex crawei*).

The 1998 INHS field update found no occurrence of state listed threatened or endangered species or habitat beyond those documented in the 1996 FEIS. For those listed species documented in the 1996 FEIS, INHS staff found no significant change to habitat or occurrence of listed populations within the I-355 South Extension alignment except for the white lady slipper, crawe's sedge and slender sandwort.

The white lady slipper was documented in the 1996 FEIS at a site north of Goose Lake. The 1998 survey found the population to be present at the site although numbers of individuals declined to 36 individuals from approximately 1,000 in 1979. This population decline was attributed to brush and cattail encroachment. This species was downgraded in 1999 from state endangered to threatened due to increased numbers elsewhere in the state.

The slender sandwort was also downgraded in 1999 from state endangered to threatened due to increased numbers elsewhere in the state. Of the 10 to 13 colonies surveyed within the Project Corridor in 1989, only one was present in 1999. This colony, located 52 to 61 meters (170 to 200 feet) from the I-355 South Extension right-of-way, contained 500 to 600 plants in 1989. INHS estimated the colony population at 6,000 plants in 1999. A new colony containing nearly 100 plants was found approximately 850 meters (2,790 feet) west of the proposed I-355 South Extension centerline.

2.13 Air Quality

2.13.1 Summary of Air Quality

The Project Corridor is located within the Chicago metropolitan area. This area is in violation of the National Ambient Air Quality Standard (NAAQS) for the pollutant ozone. The area is classified as a "Severe" ozone non-attainment area and it includes the Counties of Cook, DuPage, Kane, Lake, McHenry, Will and Aux Sable, and Goose Lake Townships in Grundy County, and Oswego Township in Kendall County. Due to the non-attainment status of the area, the State of Illinois has developed a State Implementation Plan (SIP) identifying programs intended to reduce ozone precursor emissions. A "Severe" classification means that the region must implement specific programs to attain air quality standards by the year 2007.

In addition to the SIP requirements, metropolitan planning organizations (MPO) are required to undertake conformity determinations on metropolitan transportation plans and transportation improvement programs before they are adopted, approved, or accepted. Conformity to an implementation plan is defined in the Clean Air Act as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards.

Highway or transit projects which are funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) must also be included in a conforming plan before they are approved or funded by DOT or an MPO.

Existing air quality within the Project Corridor, as defined by monitoring data is available at five locations as listed in Draft SEIS, Table 2-17 with the owner/operator and the pollutants measured at each site. In ~~1999~~2000 there were no exceedances of the 1-hour ozone NAAQS in the Chicago metropolitan area (Table 2-5). Refer to Draft SEIS, Section 2.13.1 and 1996 FEIS, Section 2.13.1 for additional information. The air quality analysis for the Project Corridor is presented in Draft SEIS, Section 4.12.

Table 2-5
Existing Air Quality in the Project Corridor

Pollutant Name	Status (2000)
PM_{10}	The primary annual standard and the 24-hour standard for PM_{10} were not exceeded in the Chicago region.
Ozone	There were no days with exceedances of the 1-hour ozone standard in Illinois.
Sulfur Dioxide	There were no exceedances of the annual, 24-hour or 3-hour standards in Illinois.
Nitrogen Dioxide	There have been no violations of the annual primary standard since 1980 in Illinois.
Lead	There were no violations of the quarterly primary standard recorded in the Chicago region.
Carbon Monoxide	There were no exceedances recorded for the 1-hour or 8-hour primary standards in Illinois.

Source: Illinois Annual Air Quality Report 2000.

2.13.2 ~~Pollutant Standard~~ Air Quality Index

~~The Pollutant Standard Index (PSI) is the national standard method for reporting air pollution levels to the general public. The PSI is based on the short-term Federal National Ambient Air Quality Standards (NAAQS), the Federal episode, and the Federal Significant Harm levels for five of the "criteria pollutants", namely, ground-level Ozone (0_3), Sulfur Dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter (PM), and Nitrogen Dioxide (NO_2). The PSI levels have been divided into five categories, "Good", below 50; "Moderate", PSI range of 51-100; "Unhealthy", between 101-200; "Very Unhealthy", between 201-300; and "Hazardous", with the upper PSI limits between 301-500. In 1999, all sectors in the Chicago area had 80% or more days in the "Good" category. In the Joliet/Will County Sector, 87.5% of the days were in the "Good" category.~~

The Air Quality Index (AQI) is the current national standard method for reporting air pollution levels to the general public. The AQI is based on the short-term Federal National Ambient Air Quality Standards (NAAQS), the Federal episode criteria and the Federal Significant Harm levels for five of the "criteria pollutants," namely, ground-level Ozone (O_3), Sulfur Dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter (PM), and Nitrogen Dioxide (NO_2). The AQI levels have been divided into six categories: "Good" (0-50), "Moderate" (51-100), "Unhealthy for Sensitive Groups" (101-150), "Unhealthy" (151-200), "Very Unhealthy" (201-300) and "Hazardous" (301-500).

AQI classifications of "Unhealthy for Sensitive Groups" and "Unhealthy" are uncommon in Illinois. Classifications of "Very Unhealthy" are rare. To date, no classifications of "Hazardous" have occurred in Illinois.

2.14 Noise

Existing noise was measured at 13 representative receptor sites throughout the Project Corridor in 2000. A representative receptor is defined as an analysis site chosen to represent other like land uses. Draft SEIS, Table 2-19 lists existing noise readings for the 13

representative receptors. A total of 70 sites were determined to be noise receptors in the Project Corridor. These sites represent isolated farmhouses, scattered clusters of residences, subdivisions, churches and parks, located along the Preferred Alignment. Refer to Draft SEIS, Exhibit 2-14 for the location of the noise receptors in the Project Corridor. The existing noise levels in the Project Corridor ranged from 45 dB(A) to 73 dB(A). This is due, in part, to the fact that some noise levels were recorded in areas near major streets or intersections while other noise levels are typical of rural locations. A noise analysis for the Preferred Alternative is presented in Draft SEIS, Section 4.13.

2.15 Solid Waste

Since publication of the 1996 FEIS, there has been a substantive change in the regulations addressing construction debris. These regulations promulgated by the Illinois Environmental Protection Agency and codified in the Environmental Protection Act, (415 ILCS 5/3.78a) define procedures for managing construction debris generated by road construction. Any construction debris generated in association with implementation of the proposed action would be managed in compliance with these regulations.

Regarding special waste, the USEPA listing of potential, suspected and known hazardous waste or hazardous substance sites in Illinois (i.e. the Comprehensive Environmental Response Compensation and Liability Information System (CERLIS)) has been reviewed to ascertain whether the proposed action will involve any listed site(s). As a result of this review, it has been determined that the proposed undertaking will not require any right-of-way or any easement from a site included in the CERCLIS listing as of August, 2000. Refer to 1996 FEIS, Section 2.15 for additional information addressing solid and special waste.

2.16 Visual Resources

No significant change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.16.

2.17 Utilities

Subsequent to the Record of Decision (ROD) for the 1996 FEIS, property for the Preferred Alternative was acquired and utilities were adjusted and/or relocated to accommodate construction of the Proposed Action. Draft SEIS, Table 2-20 identifies the type and location of new utility crossings.